Effects of road crossings and landuse

All parameters varied significantly by stream site ($p < 0.05$, Kruskal-Wallis). Therefore, geographic location and/or sampling date appear to play a role in parameter variability. Because the field season was relatively short (21 May – 12 July), little temporal variation was expected. However, because individual sites were visited only once, temporal variability cannot be tested with this data set. There were no overall significant differences in hemolymph parameters between upstream and downstream of road crossings. None of the health parameters varied in a consistent manner between upstream and downstream of road crossings (n = 20 sites, $p > 0.05$, Kruskal-Wallis).

There were also very few statistically significant differences between data collected from animals near agricultural settings and those residing along forested settings. Kruskal-Wallis tests identified only glucose and calcium as significant variants by contiguous land-use designation (Table 3.4). Glucose values were slightly lower on average in forested compared to agricultural settings. Calcium also tended to run slightly lower in animals from forested streams. The animals collected from forested sites were similar in size and weight to those collected from agricultural sites (Table 3.5).

Table 3.4. Results from Kruskal-Wallis tests for differences in median parameter values between populations contiguous to forested and agricultural settings.

Parameter	#Forested / #Agricultural Sites	Forested Site Median	Agricultural Site Median	Kruskal-Wallis H	DF	P
Glucose	10 / 9	<2 mg/dL	<2 mg/dL	5.28	1	0.022
Calcium	10 / 9	16.7 mg/dL	17.65 mg/dL	4.51	1	0.034
Phosphorus	10 / 9	0.4 mg/dL	0.5 mg/dL	2.77	1	0.096
Protein	10 / 9	58.83 mg/dL	67.05 mg/dL	2.16	1	0.142
Magnesium	10 / 9	2.7 mg/dL	2.8 mg/dL	1.06	1	0.303
Foot Tissue Glycogen	6 / 7	113.9 mg/g	106.5 mg/g	1.00	1	0.317
Bicarbonate	10 / 9	7.5 mmol/L	8.0 mmol/L	0.92	1	0.337
Cell Count	10 / 9	1018 cells/µL	1010 cells/µL	0.60	1	0.438
AST	10 / 9	5.75 U/L	6.0 U/L	0.24	1	0.622
Length	10 / 9	71.75 mm	71.5 mm	0.24	1	0.624
Weight-to-Volume	10 / 9	0.6766 mg/mm^3	0.6703 mg/mm^3	0.17	1	0.683
Parasite Prevalence	10 / 9	0.2977	0.4286	0.08	1	0.775
Ammonia	10 / 9	21.5 µmol/L	18.35 µmol/L	0.06	1	0.806
Weight	10 / 9	47.82 g	47.34 g	0.00	1	1.000
ALT	10 / 9	<4 U/L	<4 U/L	0.00	1	1.000
Tissue $d^{15}N$	10 / 9	7.626	7.326	0.00	1	1.000